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## RECENT LITERATURE.

LANKESTER ON DEGENERATION.<sup>1</sup>—Mention should have sooner been made of this book, which, with the previously published essay by Dr. Anton Dohrn,<sup>2</sup> draws attention to a phase of development, which has been somewhat neglected of late years; although the French naturalists a generation ago had a good deal to say about arrest of development, retrograde development and retrograde metamorphosis. The author recognizes the fact that there are numerous and important exceptions to the general law of progressive development, that some important groups are due to retrogressive development, or to put it into one word, Degeneration. Lankester explains what he means by degeneration thus: The lizard-like creature *Seps* has remarkably small limbs, and in *Bipes* there is only a pair of stumps, representing the hinder limbs. No naturalist, he says, doubts that *Seps* and *Bipes* represent two stages of degeneration, or atrophy of the limbs; that they have, in fact, been derived from the five-toed, four-legged ordinary lizard form, and have nearly or almost *lost* the legs once possessed by their ancestors.

"This very partial or local atrophy is not, however, that to which I refer when using the word Degeneration. Let us imagine this atrophy to extend to a variety of important organs, so that not only the legs, but the organs of sense, the nervous system, and even the mouth and digestive organs are obliterated,—then we shall have pictured a thorough-going instance of Degeneration."

The examples of degeneration given by the author need only to be mentioned, as they are sufficiently striking, and are universally regarded as such. These are the groups of which *Sacculina* and *Peltogaster*, *Lernæa* and *Lepas* are examples. The *Ascidians* are regarded as the result of such a process, and their most important stages of degeneration are represented and briefly discussed, though the figure of the larval *Ascidian* side by side with the tadpole, on p. 42, is greatly exaggerated, *a la* Haeckel, and is misleading to the lay-reader. The author also speaks of the *Ascidians* as if they were universally regarded by zoölogists as *Vertebrates*, whereas they are regarded as *Mollusks* by some, and as *worms* by many.

The author considers the antecedents of degeneration to be<sup>3</sup>:  
1. Parasitism; 2. Fixity or immobility; 3. Vegetative nutrition;  
4. Excessive reduction in size.

Lankester also regards the sponges as due to degeneration, and "as only somewhat less degenerate we have all the *Polyps* and

<sup>1</sup>*Nature Series. Degeneration.* A chapter in *Darwinism*. By Professor E. RAY LANKESTER, F. R. S. London: Macmillan & Co., 1880. 12mo, pp. 75. Price, 75 cents.

<sup>2</sup>*Der Ursprung der Wirbelthiere und das Princip des Functionswechsels. Genealogische Skizzen von Anton Dohrn.* Leipzig, 1875. 8vo, p. 87.

<sup>3</sup>See also Cope, *Consciousness in Evolution*, 1875, and *Modern Doctrine of Evolution*, AMER. NATURALIST, 1880, 266.

Coral-animals; also the Starfishes." He regards the Lamelli-branchiate mollusks as having degenerated from a higher type of head bearing active creatures like the cuttle-fish. The Polyzoa he appears to regard as degenerate mollusks, and the Rotifers as having degenerated from forms provided with legs.

The author then claims that certain human races are degenerated descendants of higher, more civilized peoples; such as the present descendants of the Indians of Central America, the modern Egyptians, "and even the heirs of the great Oriental monarchies of prae-Christian times," while the Fuegians, the Bushmen, and even the Australians may also be degenerate races. Thus while he is indisposed to regard all the human races as degenerated from an early high type of mankind, he recognizes the fact that numerous races have fallen away from a higher stage.

We are inclined to think that the examples of degeneration mentioned by the author are really such. There are other examples not referred to by Professor Lankester, such as the lice and Mallophaga, which are degenerate Hemiptera. Among the Diptera are numerous wingless degraded forms, and when we take into account the fact that nearly all Dipterous larvæ are nearly headless and evidently degenerated forms, we are inclined to think that the entire group of Diptera, numbering at least 20,000 species, are the result of a retrograde development; the Tipulidæ may be an exception, but we were before reading this book disposed to regard the entire order as having degenerated from a lost type, with close affinities to the lower Lepidoptera.

GEIKIE'S PHYSICAL GEOGRAPHY.<sup>1</sup>—Professor Geikie, the author of this little book, formerly held the chair of geology in the University of Edinburgh, but is now director of the Geological Survey of Great Britain. As an authoritative text book this publication, therefore, needs from us no recommendation; but besides that, it is written in a clear, graphic, attractive style, and the matter is well arranged. We have found the book more useful for teaching purposes than any other. It full enough and readable enough to attract and win the scholar's attention. There are some, though but few, points which in a subsequent edition might be revised; to the *Challenger's* soundings in the Pacific ocean might be added the results of the U. S. steamer *Tuscarora*, from San Francisco to Honolulu and Japan, also the results of the U. S. Coast Survey soundings in the Caribbean sea, and the origin and depth off Florida of the Gulf Stream. The author has devoted more space than is usual in similar class-books to the phenomena of the atmosphere, but the treatment of the whole subject is throughout broad and catholic.

<sup>1</sup>*Elementary Lessons in Physical Geography.* By ARCHIBALD GEIKIE, LL.D., F.R.S. Illustrated with wood-cuts and ten plates. London and New York, Macmillan & Co., 1881. 12mo, pp. 375. \$1.